(12) UK Patent Application (19) GB (11) 2 059 858 A

(21) Application No 8006154
(22) Date of filing
22 Feb 1980
(30) Priority data
(31) 26358
(32) 9 Oct 1979
(33) Italy (IT)
(43) Application published
29 Apr 1981
(51) INT CL³ B29D 23/12
(52) Domestic classification
B5A 1R106E 2B1 2D2
2U23 2U3 T25P
(56) Documents cited
GB 1561391
GB 617910
(58) Field of search
B5A
(71) Applicants
Luciano Cattani
Via Teulie
11–Milano
Italy
Fabrizio Fornaroli
Via Lecco
59–Monza (Province of
Milano) Italy
(72) Inventors
Luciano Cattani
Fabrizio Fornaroli
(74) Agents
Marks & Clerk
57–60 Lincoln's Inn
Fields
London
WC2A 3LS

(54) Producing a rolled food article

(57) In a method for continuously producing a rolled food article a plurality of moistened sponge strips (S) with a paste product thereon, such as ice-cream and the like, are caused to pass along a decreasing radius path such as to acquire a substantially cylindrical tubular shape with the paste thereinside. The rolling up apparatus (4) comprises a plurality of contiguous rollers (5) arranged along a decreasing radius path, with the trailing roller in contact with a further larger diameter roller (7) which is so arranged as to cause each sponge strip (S) to roll on itself. In a modified embodiment (not shown) the rollers (5) may support a conveyor belt which contacts the strip (S).

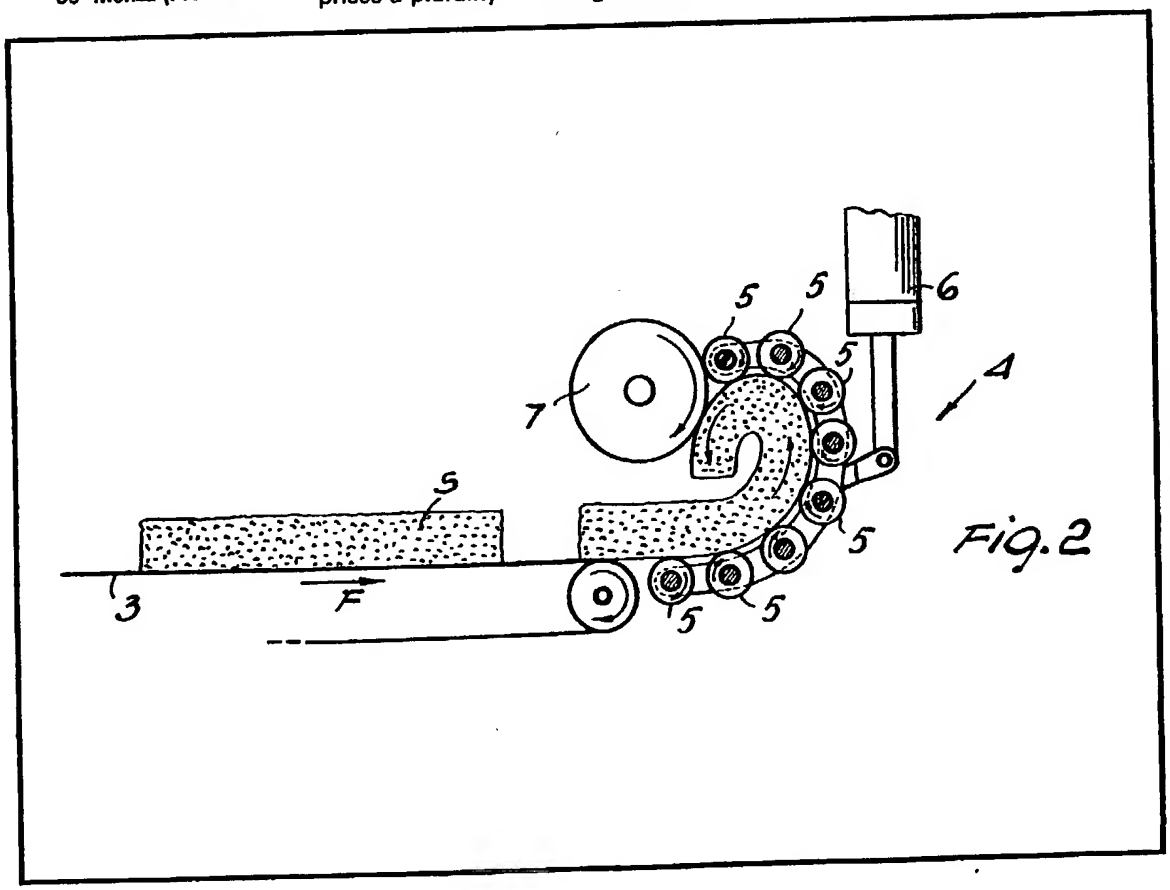

Fig. 2

2059858

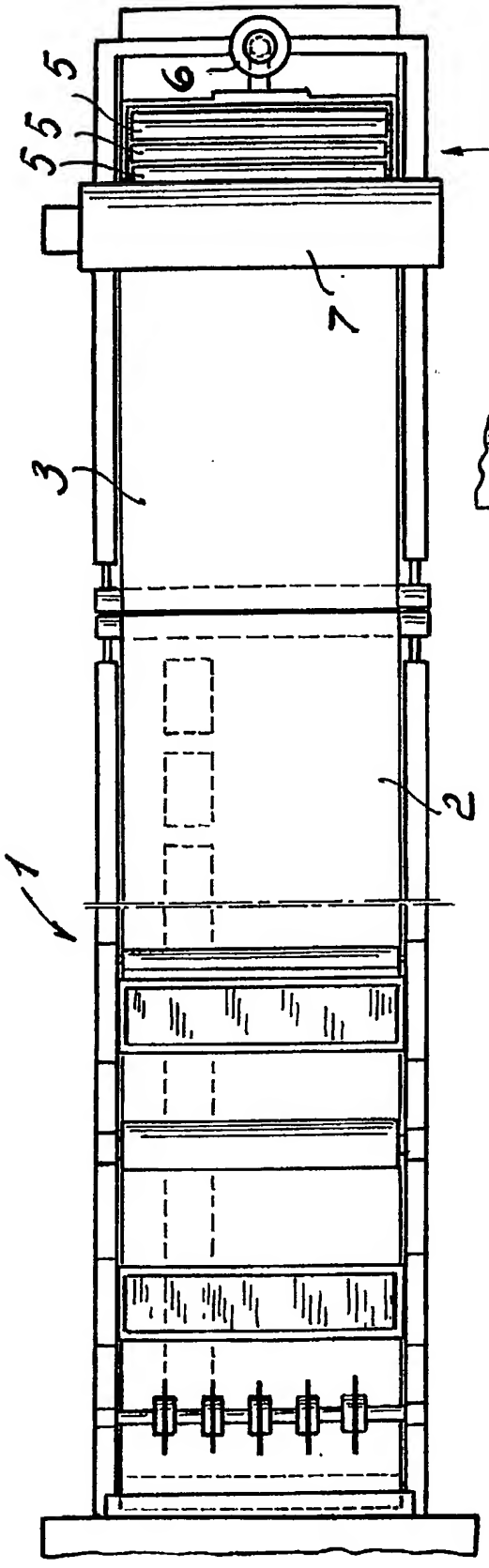

Fig. 1

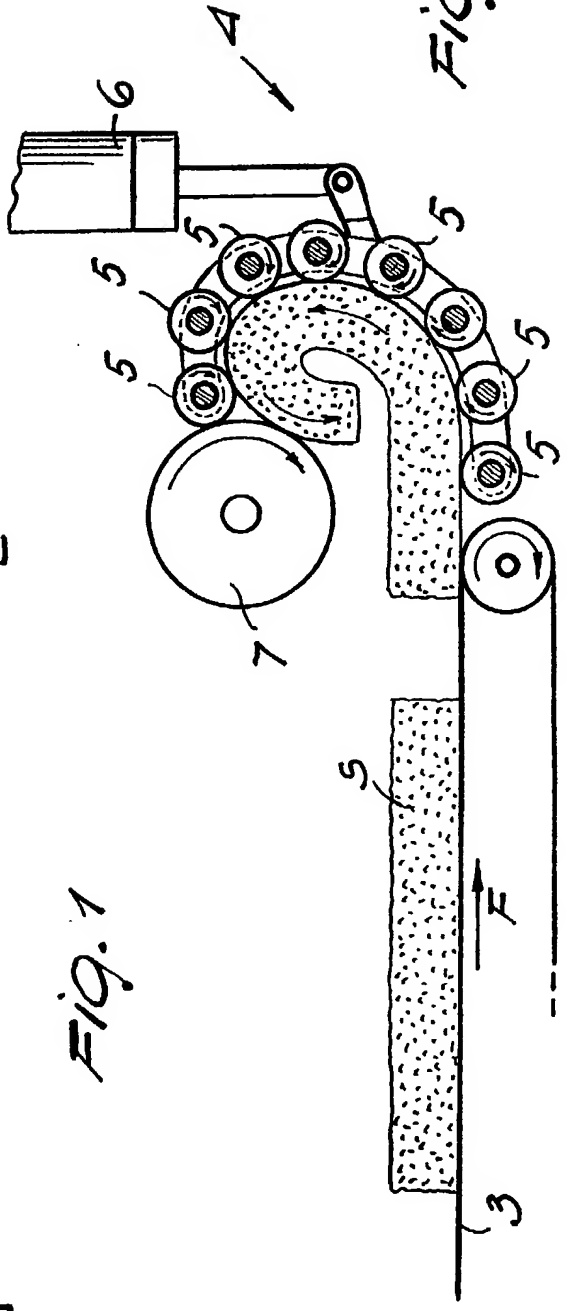

Fig. 2

SPECIFICATION

Method and apparatus for producing a rolled food article on an industrial scale

This invention relates to a method and an apparatus for producing a rolled food article on an industrial scale, said rolled food article including a wafer or biscuit or "sponge" which encloses a filler such as jam, syrup, ice-cream, and the like-based paste.

In current practice, such alimentary rolls, while meeting with increasingly wider acceptance by the consumer, are still produced with a discontinuous procedure, owing primarily to the rolling operation being carried out in a manual fashion. This results in a fairly high cost of the finished product, which retains accordingly a somewhat handicraft character. In other terms, this is still a pastry article rather than an industrial product, as it would be desirable in view of the growing demand.

The Italian Patent No. 1.017.068, issued on July 20, 1977, discloses a method for continuously producing a rolled food article, in particular ice-creams, wherein at the input end of a production line a rolling apparatus is arranged which comprises three rollers operatively cooperating with one another such as to provide the desired rolling action. However, that apparatus has failed to provide fully satisfactory results. In fact, the three-roller rolling apparatus did not prove capable of rolling the product in a consistently optimal manner, owing mainly to repeated jamming, as due to excessively spaced apart rollers which are unable to provide effectively continuous and perfect rolling. In particular, said Italian Patent No. 1.017.068 teaches an arrangement for the rolling rollers, wherein two rollers are provided at a lower level and one roller at an upper level, virtually at the vertices of a triangle, which arrangement is not entirely successful, as mentioned above and demonstrated in actual practice. In fact, and generally after a short period of operation, the apparatus of the cited Patent must be stopped for the removal of jammed material, which brings about unexpected production losses.

This invention sets out to provide a simplified method and apparatus for producing on an industrial scale, in a continuous and automated fashion, a rolled food article, in particular ice-cream rolls of the type including a biscuit or wafer which encloses the ice-cream and/or the like paste, which method and apparatus afford the possibility of producing said roll on a continuous and automated basis, by employing a single containment biscuit or wafer and regardless of the type of filler contemplated.

According to one aspect of the present invention, there is provided a method for producing a rolled food article on an industrial scale, said rolled food article including a wafer or biscuit which encloses a filler, in particluar ice-cream paste, comprising the steps of:

a) feeding said wafer or biscuit in the form of a web;

b) cutting said web lengthwise such as to form from said web a plurality of strips having pre-determined transverse dimensions;

c) intermittently passing said plurality of strips through multiple processing stations, at least one of said multiple processing stations being operative to moisten said strips;

d) distributing metered amounts of the product paste onto said strips at at least another of said multiple processing stations;

e) crosswise cutting said plurality of strips after distributing said product paste thereon, such as to form from said strips a plurality of substantially rectangular elements having predetermined longitudinal dimensions; and characterized in that it further comprises the step of,

f) depositing said elements onto a continuous motion conveyor belt, said conveyor belt transferring said elements to a rolling station comprising a plurality of rollers arranged substantially contiguously along a path of substantially decreasing radius and cooperating with one another such as to cause said substantially rectangular moistened elements with said product paste thereon to be rolled up and acquire a substantially cylindrical tubular shape.

Further features and advantages of the invention will become apparent from a description of a preferred, though not limitative, embodiment of a method particularly for continuously producing a rolled food article, and of an apparatus implementing said method, with reference to the accompanying illustrative but not limitative drawing, where:

Figure 1 is a schematical plan view of the apparatus implementing the method of this invention, some parts being omitted for clarity; and

Figure 2 is a view of the rolling head according to this invention as associated with the apparatus shown in Fig. 1.

It should be pointed out that the inventive apparatus has not been shown in the drawings in every detail as far as the known portion thereof is concerned, whereas the rolling head associated therewith has been fully detailed, said rolling head being the essence of this invention. For a more detailed discussion of the known portion of the apparatus reference can be made to the related literature and in particular to the cited Italian Patent No. 1,017,068.

Briefly, and with reference to Fig. 1, the apparatus 1 comprises a conveyor belt 2 driven by a conventional means, not shown, such as to move intermittently past a number of processing stations, also not shown, at each such stations the biscuit/wafer or "sponge" S being subjected to specific proc-

essing step, such as, for example, the deposition of a syrup, ice-cream paste, chocolate, etc. thereon. According to the invention, the apparatus 1 includes a further modular section 3, also comprising a conveyor belt which, however, differs from the belt 2 in that it is driven of continuous motion. Thus, the sponge S portions, after receiving the ice-cream and being suitably cut, will be spaced apart when entering the rolling unit 4 of this invention. With reference more specifically to Fig. 2, the conveyor belt 3, which as mentioned is moved continuously in the direction of the arrow F, will transfer a plurality of previously cut up sponge S portions having ice-cream deposited thereon to the rolling head 4 proper, which rolling head, in the embodiment shown in Fig. 2, includes a plurality of rollers 5, arranged substantially contiguously to one another and along a substantially decreasing path. The trailing roller 5 is opposed by a roller 7 of a larger diameter than the roller 5, which may be and idler roller or a driving one. In Fig. 2, the rollers 5 and the roller 7 are rotated in a clockwise direction, the movement being imparted thereto by a conventional motor means, not shown. The rolling unit 4 further includes control means 6, only schematically shown as comprising a hydraulically operated cylinder-piston assembly, for actuating the rollers 5. Timer means, also not shown, are provided for timing the movements of the rollers in accordance with the length of the sponge portions to be rolled up. With this arrangement of the rollers 5, and by providing the opposing roller 7, the rolling action is at an optimum, as actual tests have demonstrated, no such jamming problems being encountered as occurred instead in the rolling unit of the cited Italian Patent No. 1,017,068.

In a modified embodiment of the invention, instead of a plurality of rollers 5 arranged as shown, it may be provided for the sponge S to be received onto a further conveyor belt supported on the rollers 5 and suitably retained by means that are well within the capabilities of those skilled in the art, such as backing rollers or suitable guides. Thus, each sponge S portion will be contacting the belt rather than the surfaces of the rollers 5 directly.

From the foregoing description, it will be apparent that the invention fully achieves its objects. In particular, actual tests have demonstrated that, thanks to the almost continuous arrangement of the rollers 5 the last of which operates against the roller 7, it becomes possible to roll up the sponge S continuously and produce rolled food articles in an automated fashion, thus favoring an effective industrial scale procedure. Obviously, the rolling unit according to the invention will have its operation timed to the length of the sponge S to be rolled up.

As described, the invention is susceptible to many modifications and varations, all of which are intended to fall within the purview of the instant inventive concept.

CLAIMS

1. A method for producing a rolled food article on an industrial scale, said roller food article including a wafer or biscuit which encloses a filler, in particular ice-cream paste, comprising the steps of:

a) feeding said wafer or biscuit in the form of a web;

b) cutting said web lengthwise such as to form from said web a plurality of strips having pre-determined transverse dimensions;

c) intermittently passing said plurality of strips through multiple processing stations, at least one of said multiple processing stations being operative to moisten said strips;

d) distributing metered amounts of the product paste onto said strips at at least another of said multiple processing stations;

e) crosswise cutting said plurality of strips after distributing said product paste thereon, such as to form from said strips a plurality of substantially rectangular elements having predetermined longitudinal dimensions; and characterized in that it further comprises the step of,

f) depositing said elements onto a continuous motion conveyor belt, said conveyor belt transferring said elements to a rolling station comprising a plurality of roller arranged substantially contiguously along a path of substantially decreasing radius and cooperating with one another such as to cause said substantially rectangular moistened elements with said product paste thereon to be rolled up and acquire a substantially cylindrical tubular shape.

2. A method according to Claim 1, characterized in that the rolled food article blank, upon emerging from the trailing roller in said plurality of rollers during the roll up step, is opposed by a further roller contacting said trailing roller in said plurality.

3. An apparatus implementing the method of Claim 1, comprising at least a first conveyor belt section moved of intermittent motion past a plurality of processing station, a second conveyor belt section located downstream of said first section and moved of substantially continuous motion, characterized in that it further comprises, at the output end of said second section, a rolling unit including a plurality of rolling rollers of substantially the same diameter and substantially contiguous and arranged along a substantially decreasing radius path, the trailing roller in said plurality being opposed by a further roller having a substantially larger diameter.

4. An apparatus according to Claim 3, characterized in that said rollers of substantially the same diameter in said plurality of

rollers are enclosed within a further rolling belt.

5. An apparatus according to Claim 3, characterized in that it comprises timer means effective to time the operation of said rollers.

6. A method for producing a rolled food article on an industrial scale, substantially as herein described with reference to the accompanying drawing.

7. An apparatus implementing that method, substantially as herein described with reference to the accompanying drawing.

Printed for Her Majesty's Stationery Office
by Burgess & Son (Abingdon) Ltd.—1981.
Published at The Patent Office, 25 Southampton Buildings,
London, WC2A 1AY, from which copies may be obtained.